

C'est une plante du sous-bois de la forêt sèche sur calcaire. Tous les échantillons rapportés à cette sous-espèce viennent de l'Antsingy d'Antsalova et du Bemaraha. Aucun échantillon de la subsp. *madagascariensis* ne vient de cette région. Il y a donc là une population isolée pouvant se distinguer par les caractères du fruit.

NOM VERNACULAIRE : Poapoalahy (Sakalava).

MATÉRIEL ÉTUDIÉ. — MADAGASCAR : *Harmelin 10206 RN*, Antsalova, 10.1.1959, fr. (TEF); *Leandri 316*, Antsingy, Trano Passage, 11.10.1932, fl. ♂ (P); *416*, forêt de Soahazo, Antsingy, 22.10.1932, fl. ♂ (K, MO, P); *498*, Andranogidro, Tsingy du Bemaraha, 9^e réserve, rochers calcaires, 5.11.1932, fl. ♂ (K, P); *959*, Tsingy du Bemaraha, 9^e réserve, 1932-33, fr. (K, P); *1111*, Salapango, Tsingy du Bemaraha, 9^e réserve, 1.1.1933, fr., type de la sous-espèce (BR, G, K, MO, P, WAG); *2643*, calcaires de l'Antsingy, vers Ambodiriano, Est d'Antsalova, alt. 100-150 m, 21.1.1960, fr. (P); *Morat 4817*, Antsingy d'Antsalova, R.N. 9, janv. 1975, fr. (P); *Randriambelo 7081 R.N.*, Bekopaka, Antsalova, 20.1.1955, fr. (P, TEF).

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The genus *Polyalthia* Blume (*Annonaceae*) in Madagascar

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Summary : A review of the genus *Polyalthia* Blume (*Annonaceae*) in Madagascar is presented in which the 18 species recognized are placed into five informal "species groups". Four previously recognized species are reduced to synonymy, and five species are described as new : *P. sambiranensis* Capuron ex Le Thomas & Schatz, *P. angusti-elliptica* Schatz & Le Thomas, *P. keraudrenii* Le Thomas & Schatz, *P. multistamina* Schatz & Le Thomas, and *P. pendula* Capuron ex Schatz & Le Thomas. A new pollen type for Malagasy species of the genus is presented.

Résumé : L'étude du genre *Polyalthia* Blume (*Annonaceae*) à Madagascar permet de reconnaître 18 espèces classées en cinq groupes informels. Quatre espèces sont mises en synonymie et cinq espèces nouvelles sont décrites : *P. sambiranensis* Capuron ex Le Thomas & Schatz, *P. angusti-elliptica* Schatz & Le Thomas, *P. keraudrenii* Le Thomas & Schatz, *P. multistamina* Schatz & Le Thomas, et *P. pendula* Capuron ex Schatz & Le Thomas. Un nouveau type pollinique est mis en évidence pour les espèces malgaches du genre.

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As currently circumscribed, the genus *Polyalthia* Blume is among the largest of the genera of *Annonaceae* with approximately 150 species centered in southeast Asia, and extending to eastern Africa. In all probability, a number of disparate elements are contained therein, and further revisionary studies will result in the removal and/or segregation of groups of species. In the African-Malagasy region, the section *Afropolyalthia* Engl. & Diels, consisting of two andromonoecious west African species, was considered by VERDCOURT (1969) to represent a distinct genus *Greenwayodendron* Verdc., although LE THOMAS (1969) has subsequently disputed its validity, and retained the two species in *Polyalthia*.

When last treated for the Flore de Madagascar et des Comores, CAVACO & KERAUDREN (1958) recognized 15 species of *Polyalthia* in Madagascar and one additional species from Anjouan, the Comores. The accumulation of material during the intervening years now permits a review of the genus in Madagascar, resulting in the reduction of four species to synonymy, and the description of five new species. Further material of several poorly known taxa, and additional field work, are required before a complete revision of the genus in Madagascar can be realized.

The *Polyalthia* species of Madagascar, as well as the four east African species (*P. mossambicensis* Vollesen, *P. stuhlmannii* (Engl.) Verdc., *P. tanganyikensis* Vollesen, and *P. verdcourtii* Vollesen) constitute an homogeneous assemblage, which falls under the section

Monoon Miq., characterized by uniovulate carpels. In addition, in all species for which fruit is known, the seeds exhibit the spiniform type of processes of the inner testal layer that enter the ruminations of the endosperm.

The pollen morphology of the Malagasy species has until now been considered to be very homogeneous : grains solitary, heteropolar, boat-shaped, monosulcate with a very elongated aperture, an exine of well developed columellae, and a smooth psilate tectum consisting of medium-sized perforations, e.g., *P. capuronii*, *P. emarginata*, *P. heteropetala*, and *P. oligosperma* (LE THOMAS, 1980/81 : type A of WAHA & HESSE, 1988). This type of pollen is equally present in the new species *P. angusti-elliptica*. A preliminary study by optical microscope of the pollen of all the species of *Polyalthia* in Madagascar shows that this type of pollen is characteristic of the informal species groups B and C as defined by macromorphological characters. Similar pollen morphology is exhibited by the *Polyalthia hypoleuca* complex of southeast Asia (ROGSTAD & LE THOMAS, 1989) and is rare elsewhere in the family, raising the possibility that a constellation of Malagasy *Polyalthia* and the *Polyalthia hypoleuca* complex are sister groups. On the hand, the four other new species have, like *P. decora* (Fig. 5, 3-4), inaperturate pollen, subspherical to ellipsoidal or slightly conical, the exine noncolumellar, very fragile and little thickened, and the tectum scabrous and/or more or less strongly areolate and perforate (cf. *P. sambiranensis*, Fig. 3, 4). This pollen type is characteristic of groups A, D, and E. Without transmission microscopic studies, it is not possible to assign this inaperturate type to one of the "inaperturate" types described by WAHA & HESSE (1988) for asiatic and australian species of *Polyalthia*.

Within the Malagasy *Polyalthia*, it is possible to recognize "species groups" based on suites of characters including : the presence or absence of domatia on the lower lamina surface; the relative sizes of sepals and petals and their shape; the number of carpels and the reduction thereof; and the form and pubescence of the stigma. What follows below then, is a key to Malagasy and Comorian species of *Polyalthia*, an enumeration of the informal "species groups" with emended descriptions, proposed synonymy, and the description of five new species.

KEY TO THE SPECIES OF POLYALTHIA IN MADAGASCAR AND THE COMORES

1. Leaves glaucous below; sepals small relative to the petals, less than 2 mm long and broad; pedicel very slender *P. pendula*
- 1'. Leaves not glaucous below; sepals larger relative to the petals, greater than 2 mm long and broad; pedicel thicker, not slender 2
2. Leaves with domatia in the form of tufts of hairs in the axils of the secondary veins and midrib below 3
3. Young branches with conspicuous lenticels; leaves oblanceolate to obovate with an acute apex *P. perrieri*
- 3'. Young branches lacking conspicuous lenticels; leaves elliptic to oblong-elliptic with an acuminate apex 4
4. Young branches densely golden-ferruginous pubescent; pedicel less than 8 mm long; petals narrowly oblong, ca. 4 times longer than broad *P. henrici*
- 4'. Young branches glabrous; pedicel greater than 8 mm long; petals broadly oblong, 2(-3) times longer than broad 5
5. Pedicel 12-15 mm long; petals to 26 mm long; leaves chartaceous, lustrous above, to 22 cm long *P. sambiranensis*

- 5'. Pedicel 20-26 mm long; petals to 40 mm long; leaves membranaceous, matte above, not exceeding 15 cm long *P. humblotii*
- 2'. Leaves without domatia in the axils of the secondary veins and midrib below 6
6. Carpels numerous, greater than 40; style/stigma elongated, prismatic; secondary venation well developed; petals elliptic with a length : width ratio of 2 : 1 7
7. Stamens numerous, ca. 250; leaves elliptic to slightly obovate, attenuate-acute at the base. *P. multistamina*
- 7'. Stamens less numerous, ca. 200 or less; leaves oblong to oblong-elliptic, rounded at the base 8
8. Leaves large, 16-28 cm long, the venation raised on the upper surface. *P. keraudrenii*
- 8'. Leaves smaller, 8-11 cm long, the venation flat on the upper surface *P. decora*
- 6'. Carpels less numerous, less than 40; stigma globose to napiform, an elongate, prismatic style/stigma lacking; petals ovate to linear with a length : width ratio of 2.5-10 : 1. 9
9. Sepals long relative to the petals, the petals less than 2X as long as the sepals (in *P. heteropetala*, the petals less than 2X as long as sepals, but the petals narrowly oblong with a length : width ratio of 10 : 1); petals ovate with a length : width ratio of 2.5 : 1. 10
10. Flowers smaller, the petals 5 mm long or less; leaves lanceolate and slightly falciform, very small, 2-4 cm long, 0.8-1.2 cm broad *P. madagascariensis*
- 10'. Flowers larger, the petals greater than 5 mm long; leaves narrowly elliptic to oblanceolate to obovate 11
11. Carpels more numerous, 6-13; monocarps distinctly stipitate, the stipe 3-9 mm long; leaves oblanceolate, long attenuate at the base, the blade more or less decurrent along the petiole *P. chapelieri*
- 11'. Carpels less numerous, 2-7; monocarps nearly sessile; leaves narrowly elliptic or obovate 12
12. Leaves obovate, the apex emarginate, the petiole thick, ca. 0.7 cm long, the tertiary venation indistinct; monocarps with an obtuse apex *P. emarginata*
- 12'. Leaves narrowly elliptic-oblong, the apex rounded, the petiole slender, ca. 1.2 cm long, the tertiary venation distinct, finely reticulate; monocarps distinctly apiculate. *P. angusti-elliptica*
- 9'. Sepals generally much shorter relative to petals, the petals greater than 2X as long as the sepals (slightly less than 2X as long in *P. heteropetala*); petals narrowly oblong to linear with a length : width ratio of 7-10 : 1 13
13. Sepals large, 20-25 mm long; leaves broadly elliptic, 8-9 cm broad. *P. heteropetala*
- 13'. Sepals much smaller, less than 8 mm long; leaves not exceeding 5.5 cm broad. 14
14. Leaves lanceolate, falciform; carpels less numerous, ca. 8 *P. oligosperma*
- 14'. Leaves not falciform; carpels more numerous, greater than 8 15
15. Petals linear, greater than or equal to 45 mm long; leaves elliptic-oblong, the apex attenuate to slightly acuminate 16
16. Petals yellowish green at anthesis; flowers sparse along branch ends ... *P. capuronii*
- 16'. Petals yellow at anthesis; flowers abundant on branches behind leaves. *P. ghesquiereana*
- 15'. Petals narrowly oblong, 20-30 mm long 17
17. Leaves long elliptic-lanceolate, the secondary and tertiary venation indistinct; pedicel slightly ribbed *P. richardiana*
- 17'. Leaves short elliptic to obovate, the secondary and tertiary venation distinct; pedicel not ribbed *P. humbertii*